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EZRA TAFT BENSON
SECRETARY OF AGRICULTURE

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U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

★ THIS MONTH ★

TOM DALE, Editor

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IRRIGATION ENGINEERS.—The earliest civilizations of mankind were all built on irrigated agriculture. This was not because the first farmers used irrigation to water their crops, nor because irrigation was necessary to produce a surplus of food. Primarily, it was because the irrigated lands remained productive much longer than did the lands where rainfall furnished the water for crops.

We don't know where, when, or how farmers first learned the art and science of irrigation. Probably it was in some of the small valleys that were flooded annually. Possibly it was in the valleys of large rivers that overflowed regularly, such as the Nile, Euphrates, and Indus. Nevertheless, Man became an irrigation engineer long before he learned to write and read, probably before he had any form of stable government over a large area, and before he carried on extensive trade. In other words, he was an irrigation farmer several centuries before he was civilized.

Topsoil and Civilization
Tom Dale and Vernon G. Carter

FRONT COVER.—A 19th century water wheel and gristmill that operated into the 20th century.

Photo by Mildred DiSalvo

Safety In The Snow

A Winter Training School Teaches Future Snow Surveyors Safety Precautions and Snow Survey Methods.

By VIRGIL S. BECK

TRAVELING thousands of miles by skis, snowshoes, and snowmobiles into remote areas of the western mountains to measure and sample the snow several times during the winter, is a hazardous job and one that calls for every safety precaution.

This is the fact that was stressed to the 100 trainees who attended the Wide-West Snow Survey Training Conference at Jackson, Wyo., January 20–24, 1958. The trainees came from all the Western States, Vermont, Minnesota, Alaska, Canada, and even faraway Australia. In addition, there were about 80 observers and instructors at the conference. The purpose was to train men in how to make the most efficient snow surveys with the utmost safety.

The Soil Conservation Service is charged with leadership in making annual snow surveys. But cooperation is a distinguishing feature of the surveys, so they really are Federal-State-private cooperative snow surveys.

In the winter and early spring around 1,000 trained men make surveys on 1,300 snow courses, covering around 35,000 miles, in the Western States and British Columbia.

During the conference at Jackson, the train-

Note:—The author is information specialist, Soil Conservation Service, Berkeley, Calif.

An overnight bivouac shelter on the Grand Tetons.

ees were separated into four groups of about 25 men each. During the forenoons, the groups attended general instruction sessions together. They were instructed in the theory and practice of snow surveying, travel equipment, preparation for winter trips, snow survey note keeping, first aid, survival in snow, rescue, and other phases of the work.

In the afternoons, each group received field training on different phases of snow surveying. While one group was learning to sample and determine the water content of snow, another was learning how to travel by skis and snowshoes, the third was being trained to drive crawler-type machines that travel over snow, and the fourth was learning first aid and rescue methods.

Each night one group went up on the Grand Tetons for a night bivouac to learn winter survival methods. The trainees, attired in heavy winter clothing, dug fox holes in the snow, lined them with boughs, spread their sleeping bags, crawled in, and bedded down for the night.

Snow surveyors learn to work as teams. Once a month during the winter and early spring, they load their over-snow machine on a truck and set out for the snow course high in the mountains. The truck goes as far as possible, then the over-snow machine is unloaded, and the journey is continued until the machine can go no farther.

Then the two men take to skis and snowshoes. They are equipped with a long hollow tube made of metal, an inch and a half in diameter, with sharpened saw teeth at one end, which they use in sampling the snow courses.

A snow course is a permanently established series of 10 stations in line and 100 feet apart so that the snow is measured in exactly the same place each month and each year. A few

Instructing trainees on safety precautions in skiing at the Wide-West Snow Survey Training Conference.

Instruction is given trainees on safety precautions and the use of over-snow tractors.

are at low elevations, but the majority are located in high remote mountain areas where they are protected from drifting snow and exposure to snow melt.

The surveyors carry with them plenty of warm clothing, skis, snowshoes, nonfreezeable army rations—all articles of food or clothing that are needed for survival.

Arriving at a course, they drive the metal sampling tube straight down until it reaches the ground at each of the 10 sampling points. As the tube sinks, it fills with snow. The depth of the snow then is measured in inches graduated on the outside of the tube. The tube and snow core is then withdrawn and weighed to determine the amount of water in the snow. The average of these 10 sampling points gives snow depth and water content for that course and the adjoining area.

This information, collected by the Soil Conservation Service and cooperating agencies, is correlated and monthly reports are issued. Around mid-April the SCS issues a forecast of the amount of water that will be available from snow melt. Water users in the West base their plans for the year's operations on this forecast.

Snow surveys have been made for many years. Congress made appropriations for snow surveys to the former Bureau of Agricultural Engineering in 1935. The Division of Irrigation, which was in charge of snow surveys, was transferred to the SCS in 1939, and continued to make surveys until 1953, when the Snow Survey Unit was transferred to the operations branch of SCS and became the Snow Survey and Water Supply Forecasting Section.

R. A. (Arch) Work, head of the snow survey program for SCS and stationed in Portland, Ore., reports that during the last 17 years SCS people and their cooperators have traveled 400,000 miles in the roughest kind of country, under the most hazardous climatic and physical conditions, without the loss of a single life—all by ski and snowshoe. This is equivalent to 16 times around the world. Adding to this the travel made by over-snow machines and helicopters brings the fatality-free travel up to 600,000 miles.

This achievement recently was the subject of a citation by the National Safety Council. In a letter to D. A. Williams, Administrator of the Soil Conservation Service, G. C. Stewart, executive vice-president of the National Safety Council, said in part:

"I know this work involves serious problems of coping with such hazards as over-mountain travel in remote areas and in extremely cold temperatures, with constant danger of avalanche conditions, blizzards, and other hazards involved in travel at high altitudes and under mountainous conditions. So I am sure it must indeed be gratifying to you that this work has been carried out so effectively for the past 17

Measuring the water content of soil beneath the snow pack with a Coleman meter.

years with 800 to 1,000 employees in the mountainous Western States, and that not a single life has been lost.

"On behalf of the National Safety Council, I wish to commend you, all the men in your organization, and all those cooperating with them, for the job they have done in safeguarding the lives of the people engaged in this hazardous undertaking."

Channel Improvement

A Group of California Farmers Check Flood Damage and Improve Their Land by Straightening and Improving the Channel of an Intermittent Stream.

By BILLY R. BRUNER

TURKEY raiser Fred Huntsinger and dairyman E. G. Schwartz, who farm along the Bouquet Canyon Channel, in Los Angeles County, Calif., aren't much disturbed over the prospects of "flash rains" and seasonal watershed runoff.

For the first time in years, they're saying, "Let 'er rain."

Actually, Schwartz, Huntsinger, and their neighbors, Louis R. Moreno, Paul Benz, and the Los Angeles County Juvenile Department's boys camp, will tell you they have never had things so good—flood preventionwise, that is.

To begin with, Bouquet farmers weren't farming top land. Like a growing number of coastal farmers, they had succumbed to the pressures of urban expansion. With freeways, factory sites, supermarkets, and housing additions going in around them, the farmers simply couldn't afford to farm their rich San Fernando Valley acreages.

Note:—The author is work unit conservationist, Soil Conservation Service, San Fernando, Calif.

Bowing to the urbanization tide, the farmers used a combination of community teamwork and land-treatment work to turn less fertile lands into moneymakers.

Reason for the smugness of the farmers today, is a carefully reamed out creek channel, which safely controls rampaging flood flows from Texas and Vasquez Canyons.

The $40,000 channel improvement job is a team project, carried out by the Upper Santa Clara Soil Conservation District under a cooperative agreement with the Federal Government. Several agencies cooperated in the undertaking, including the Soil Conservation Service, which provided technical assistance, and the Agricultural Conservation Program Service, which shared nearly half of the cost.

Over the years, the farmers had taken some solid beatings from Bouquet Channel. Torrential rains swelled the shallow, debris choked stream and overflowed some 70 acres of cropland. The 1938 flood, for example, reduced the land to less productive use.

There wasn't much the farmers could do about highwater singlehanded. Schwartz spent around $4,000 trying to keep water off his lands. Most of this conservation work went

John Alden, of SCS, Ira D. Cate of ASC, and Fred R. Huntsinger, turkey raiser, discuss the Bouquet Canyon channel improvement project.

SCS technicians discuss Bouquet Canyon channel plans with E. G. Schwartz (right) in the bed of the completed channel.

down the drain. Staving off floods wasn't easy with homespun techniques.

When the 1953 flood cut big chunks in their acreages, scoured fields, and spread a layer of rock and silt on lands, the farmers decided it was high time to tackle their flood problems together.

Through a pooling agreement with their soil conservation district directors, the group received engineering help from SCS technicians with the farmers and ACP sharing the cost of the channel improvements.

Flood prevention work consisted chiefly of deepening, widening, and straightening more than a mile of the channel, beginning at the west boundary of the boys camp and extending upstream through Huntsinger's property, through a portion of Moreno's ranch, across Schwartz' farm, and again through Huntsinger's turkey ranch.

Farmers didn't take any chances on the newly shaped banks eroding again. Los Angeles County purchased soil-holding black locust seedlings and planted them along the rim of the banks. Schwartz and Huntsinger chipped in and bought California bamboo plants from the Antelope Valley Soil Conservation District nursery, and the county put them in at the toe of the slopes.

With the flood problem buttoned up, Schwartz and Huntsinger figure to get a lot more good out of their heretofore useless lands.

Schwartz puts things this way: "It's now safe and profitable to improve and develop my potentially high-producing land and put it into better paying crops. I'll get some good pasture by filling the swales and grading the wet areas back from the creek channel. This year for the first time, my cows will get good grazing from all my fields."

And Huntsinger says, "Since I bought my farm in 1951, I've needed more green feed for my turkeys. But until we got the channel work in, it was just a waste of time and money to improve the waste areas. I'm really proud of the way we teamed up together to lick the floods. And we're all mighty pleased at the helping hand we got from SCS and ACPS."

Neighboring farmers are already supplementing the channel job by building erosion-control dams on the watershed feeding into the creek and thus putting the final clincher on high intensity storms.

CONSERVATION IS EVERYBODY'S BUSINESS because it affects everybody. The battle will be almost won when enough of the people realize their own personal stake in sound conservation practices.

EZRA TAFT BENSON,
Secretary of Agriculture

Learning By Doing

Vocational Agriculture Students Learn About Soil and Wildlife Conservation Through Cooperation With Their Instructor, Their Dads, the Local Wildlife League, the Soil Conservation District, the SCS, and the ASC Committee.

By H. A. NOTTORF

THE Vocational Agriculture instructor and Soil Conservation Service technicians at Columbia, Mo., have teamed up in a teaching-application program that has put soil consercation plans on 36 farms in the Boone Soil District. More than that, the program is making conservation farming a way of life for many Boone County boys who otherwise might not have had the opportunity to learn this method of farming. Parents, too, are now enthusiastic about conservation work where before, some were reluctant.

The program had its beginning in an unusual way. The Boone County Wildlife League was interested in working with youth groups on wildlife preservation. Their Executive Secretary, Charlie Bell, discussed this with Dave Schneider, Vo-Ag instructor of Hickman High School. The league was willing to offer awards to those boys who did outstanding work toward development of wildlife habitats.

Schneider, interested in a good program of both wildlife and soil conservation, suggested that the Soil Conservation Service be asked to assist in the program. He explained to Bell that SCS plans included both wildlife and soil conservation. As a result, a meeting was called by the Boone County Wildlife League. Both Schneider and C. H. Dunn, work unit conservationist for SCS, were asked to attend and explain how they could contribute to the program. It was agreed that all phases of conservation pertaining to both soil and wildlife would become a part of the Vo-Ag course of study. Dunn and Schneider would initiate the program and the wildlife league would contribute their awards to boys who made the greatest contribution and most progress in establishing both soil- and wildlife-conserving practices.

As a starter, Schneider, with technical advice from Dunn, gave instruction on soil classification. The boys made soils maps of their farms; then, their classifications were correlated with soil surveys made by the SCS soil scientist.

The land was classified according to its texture, depth, erosion, steepness of slope, droughtiness, inherent lack of plant nutrients, and parent material. With these facts to build on, a good conservation plan could be developed.

Working with their dads on their own farms,

Max Shirky, Dave Schneider, and Don and Charles Gibson inspect a new grass waterway.

Note:—The author is management agronomist, Soil Conservation Service, Columbia, Mo.

Vo-Ag instructor, SCS technician, father, and FFA boy inspect a gully that is to be converted to a grass waterway.

the Vo-Ag students requested assistance from their soil conservation district in planning and developing a good conservation program on their home farms.

Naturally, the board of supervisors of the district was pleased to approve the requests for such wholesome cooperation, and Schneider and Dunn lost no time in organizing group training and planning meetings for the farms.

During the second stage, on each farm, the group got down to the business of developing the plans. After determining the capabilities, the future land use was agreed upon. Some land was best suited for pasture, some for woodland, some for wildlife, and other land was adapted to cropland.

On the cropland, where erosion could not be controlled by a desired conservation rotation plus contour tillage, a water-disposal system was designed which, coupled with the vegetation, would give the necessary control.

Sod waterways, terrace systems, and new field arrangements to fit the rotation and contour farming patterns were planned. Rotations were designed to fit the soil, to obtain maximum continuing production, and to supply the feed needs of the farm. Sometimes new fences were planned on the contour to fit new field arrangements.

The boys really enjoyed the sessions; and, by actually seeing the problems, analyzing the facts, and working out solutions, they could get a better grasp of the situation than by classroom discussion. Of course, the dads got a lot out of it too, and sometimes had the neighbors over to take part in the discussions.

During the last phase, the practices planned were actually put on the land. Again the boys, their dads, Mr. Schneider, and the SCS technician worked together as a team. The boys took turns on the level and rod, staking terrace and contour lines. They kept notes and learned whether to add or substract for the correct rod reading to make certain the water would run the way they wanted it to go.

They ran tractors to construct plow-built terraces and spread the right kinds and amounts of fertilizer to get the grass well started in the sod waterways. The "learn by doing" phase became reality, and everyone gained enthusiasm and understanding by working out and establishing the plan.

The most outstanding feature of this cooperation is that practically all of the dads became enthused about the activities and a lot of conservation work was accomplished as a result.

This program has increased in scope. Each year, a new group of Vocational Agriculture students begin with farm plans; thus conservation planning has become a continuous process in this school. The SCS, Vo-Ag, and ASC work together and stand as a three-legged stool in the promotion of conservation.

So far, 30 farms have been planned this way. Each year Schneider makes room in his heavy

SCS farm planner, Vo-Ag instructor, and father confer with two FFA boys about the success of a new grass waterway.

class schedule for planning several more farms by the group discussion method. Since 1956, he has requested that each student develop a conservation plan on his home farm. Max Shirky, SCS soil conservationist, who works with Dunn on the conservation planning activities, has worked with each boy and his dad on their plans. Shirky reports that many of the boys are doing an excellent job on their farms.

In 1957, 21 acres of sod waterways, 7 miles of terraces, 260 acres of contour farming, 9[illegible] acres of pasture plantings, and 10 ponds were constructed.

There are 43 FFA members in Boone County who are working on their conservation program during the school year 1957–58.

RANGE IMPROVEMENT—

A Challenge To Research

No. 33

This is the thirty-third of a series of articles to appear from time to time in explanation of the various phases of research being conducted by the Department of Agriculture on problems of soil and water conservation.

By WESLEY KELLER

MANY notable achievements may be credited to the 50 or more years of research on the Western Range. The major range types have been defined and much has been learned about the vegetation. Thousands of experimental plots have contributed to the testing and appraisal of many introduced and native forage plants, chiefly grasses. A body of knowledge and experience has been built up which enables a skilled rangeman to "read" the range and recognize its current productivity as compared to its potential.

Widespread overuse has been recognized and management practices intended to lead to range improvement have been developed and started wherever possible. Much has been accomplished in the development of mechanical and chemical means, as well as by fire, to economically and effectively eliminate low-value vegetation and prepare a suitable seedbed for grass.

This work has been paralleled by the seeding of several million acres of abandoned cropland and the most favorably situated rangeland to a few well-adapted species—the most important one being crested wheatgrass. Yet, a great deal more needs to be done to minimize failures under the more favorable conditions, and to extend seedings out beyond the fringes of the cultivated lands into the tougher sites that make up the bulk of the Western Range.

Suppose we look briefly at this Western Range. It occupies three-fourths of the western half of the country, or over 700 million acres. The range is not only very large, it is also highly heterogeneous, especially when compared with cultivated lands in the mountain valleys of the West. The free interaction of altitudes, exposures, and slopes assures tremendous differences in climate as well as in soil. Aside from its heterogeneity, there is perhaps only one characteristic in which the range is consistent; it is submarginal for cultivated crop production.

The productive powers of the range are low because of the paradox that, in general, the most productive soils occur where moisture is most deficient, and the least productive soils are where moisture is most adequate. Soils capable of high production are found at high elevations (where moisture is adequate), but here temperatures are low, the growing season short, and plant growth generally limited thereby. But with all her differences, the range is clothed with vegetation which has, over the ages, grouped itself in response to the total environment into about 10 major types, each with somewhat distinctive characteristics.

Note:—The author is agronomist, crops research division, Agricultural Research Service, Beltsville, Md.

The bulk of our rangelands in some of these types can be restored to high productivity by correct grazing management alone. Although, to determine what is correct grazing management is another big job for research. On many millions of acres grazing management alone is not adequate. It may be too costly, because too slow. And when low palatable invaders come in, it may be inadequate to even check their spread. A striking example of this is the extensive invasion of mesquite on Southwestern rangelands. The recent drouth accelerated the rate of mesquite invasion; but, no method is known, short of direct attack upon mesquite itself, of removing it from the range, or even of appreciably retarding its spread. Each year the attack is delayed, the ultimate cost increases.

Consider for a moment the pinyon-juniper type of range, occupying approximately 75 million acres. The better parts of this type of range will produce good crops of forage when seeded after removal of the trees, but this is costly. Research has not yet come up with an inexpensive, effective method of eliminating pinyon-juniper. Large forests of pinyon-juniper with fairly high forage potential, are at present yielding very little feed.

The job of range improvement, of meeting and mastering the several specific problems presented by each type or division of a type, is neither simple nor impossible. Like every other problem research has tackled, it will yield in proportion to the research effort expended on it.

Up to the present time research aimed at improvement of the Western Range has paid large dividends. But, the total research effort has been so inadequate, in relation to the total problem, that nearly all the effort has been expended on the most favorable sites available —those most likely to respond to practices growing out of a minimum research effort. If we are ever to obtain the maximum continuing benefit from all our rangelands, our total research effort will have to give much more consideration to extensive areas, which will probably respond more slowly and less abundantly.

We can surely move on to problems incomparably more difficult than those we have centered on up to now before there is any real likelihood that the benefits gained will not justify the cost. It is entirely possible that before

The sagebrush-grass type occupies more than 90 million acres of the Western Range. Overgrazing has reduced the grass and increased the sage in most areas. Improvement will require sage removal, grazing management, and, in some cases, grass seeding.

we reach this point weather control will have eliminated our moisture deficit and greatly enhanced the productivity of much of the Western Range.

Improving rangelands by seeding has been generally successful in the more favorable parts of the sagebrush-grass, the shortgrass, the Pacific bunchgrass, and open forest types of range. Yet failures have been too common. It is a reasonable assumption that failures are most frequently a result of unfavorable turns of the weather. It is also a reasonable assumption that failures would be considerably reduced if more consideration were given the requirements of the germinating seed and growing seedlings, and less hope placed upon "breaks" in the weather.

To determine the minimum requirements of range seeding, from the standpoint of the physiology of the germinating seed and the developing seedlings, is one of the important problems which research urgently needs to examine. Research over the years has taught us a great deal about what happens when rangelands are seeded under different conditions, but it is something of a shock to realize how little we know about why we obtained the observed results.

The pinyon-juniper type of range covers about 75 million acres, scattered around mountain valleys and on mesas of the southern part of the Western Range.

Forty million acres of salt desert shrub on the Western Range are an important winter range for sheep. Some can be improved by grazing management; but, millions of acres have been invaded by noxious species for which no economic control is known.

Why is it that crested wheatgrass will often succeed under conditions where several other species may fail? Is crested wheatgrass able to germinate in less time, or at lower temperatures, or with less moisture? Does it withstand heat, cold, wind, or drouth better as a seedling? Is its nitrogen requirement lower? Does it send down roots faster, or farther? Is it more efficient in the use of water? Does it go more completely into dormancy in warm weather? Does it grow at lower temperatures than other grasses require, or faster at minimum temperatures for growth? Which one, or combination, of these is the correct explanation? Or is the explanation to be found among an endless number of other possibilities not listed?

Perhaps we know some of the answers, at least when the comparison is between certain species; but, we need to think much more in terms of *why* in connection with the many results we observe. Among other things, we need much more complete data on both the soil and the microclimate. There is a logical explanation for every success or failure in range seeding, in terms of the physiology of the seeded plant. When we have learned enough to predict the outcome of seedings, on the basis of

(Continued on page 216)

PRODUCTIVE FARMS WITH ABUNDANT WILDLIFE

By D. A. WILLIAMS

CONSERVATION becomes particularly more urgent as well as more difficult as our human population grows. There is more and more pressure on less and less land for more of everything that land provides—more food, more fiber, more wood, more water, more wildlife, more recreation, and more room for just living and working.

A large part of the solution to today's conservation problems can be found in the field of agriculture and in the hands of the private owners and operators of land. Land, together with its component elements of soil, water, grass, trees, and wildlife, is the physical object of conservation.

About four-fifths of all our land is in farms or used for grazing by farmers or ranchers. Most of our water falls on agricultural land and is therefore first of all an agricultural resource. Most of our timber grows on private land. Four-fifths of the game produced and hunted is on land under private control. Thus, any approach to the land, of necessity, must be mainly through its use for agriculture, and through the attitudes and actions of the men who, under our cherished American system, have great latitude in the management of their affairs and their property, including land.

Agriculture does displace some wildlife by altering its habitat. At the same time, agriculture creates new habitats—for the same kinds of wildlife at other locations, or for other kinds of wildlife whose requirements are better suited to an agricultural landscape. As a result, *there is probably more wildlife today than when our forefathers first saw our land.*

As you travel anywhere in the country today you can see the evidence of conservation progress based on a new concept of conservation. Modern soil and water conservation means putting to work on the land needed combinations of effective practices—combinations planned for and fitted to each acre of land, according to the use for which that land is best suited.

This new land-use pattern, which respects the capabilities of the land, of a necessity includes a place for wildlife. Some land is permanently dedicated to wildlife. The farm or ranch, planned and managed as a whole, produces wildlife as a *primary crop* on some areas, and as a *by product* on the entire land unit.

The existence, in the form of soil conservation districts, of organized, local conservation efforts by farmers and ranchers has been the greatest single factor in the conservation progress made in the last 20 years. Today there are 2,779 soil conservation districts that include about 93 percent of all the farms and ranches of the country and have 1,728,000 cooperators.

The time is right for sportsmen and wildlife organizations to join with soil conservation districts in a potent working relationship that will benefit all land resources and users of these resources. No other approach to the solution of basic soil, water, and wildlife conservation problems can equal the potential of such a partnership.

Conservation farmers and sportsmen have much to offer each other. Farmers are the owners and custodians of most of the land on which sportsmen want to hunt and fish. They protect and feed the wildlife, even though they do not own it. They can manipulate the environment in such a way as to increase wildlife populations. They can create dual-purpose water developments that serve both agricultural and recreational purposes. They represent respected farm leadership in the community and can influence adoption of favorable wildlife activities.

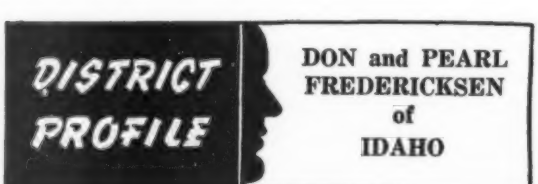
Sportsmen can support, locally and national-

Note:—This article is a digest of a talk by the Administrator of the Soil Conservation Service at the North American Wildlife Conference, St. Louis, Mo., March 3, 1958.

ly, the programs and developments that will strengthen and help soil conservation districts. They can help non-farm people to understand farm problems. They can help others to see that wildlife comes from agricultural lands—that wildlife is a crop as truly as corn, forage, or trees—to be produced by conscious land management. Many farmers are themselves ardent sportsmen, and would welcome the further association of organized sportsman groups.

Sportsmen can find ways of giving one or a group of farmers specific help in a conservation practice or development of value and benefit to the farmer, to the sportsman, and to the community. They can assure farmers that they will be adequately compensated for extra effort or sacrifice of income incurred in producing wildlife harvested by sportsmen. They can develop means of protecting farmers from undue harassment by hunters or fishermen.

Both groups can do these things in the knowledge that working together they can each reap from the land those products which it can yield so bountifully when it is used and developed within its greatest capabilities. We *can* have productive farms and abundant wildlife—at the same time.



DON and PEARL FREDERICKSEN of IDAHO

ALMOST everyone who lives out in the country in Idaho, and many of those who live in cities and towns, know Mr. and Mrs. Don G. Fredericksen of Gooding, better known as Don and Pearl. And those who know them admire them because of their activities in agricultural and rural leadership, with the accent on soil and water conservation via the soil conservation district route. They have come up through the ranks until they are also active in soil and water conservation and other agricultural affairs nationally.

Don is the Area 7 vice president and chairman of the Western States public lands committee in the National Association of Soil Conservation Districts. He has been president of the Idaho Association of Soil Conservation Districts for 3 years and previously served as a division director. For 10 years he has been chairman of the governing board of the Gooding Soil Conservation District. He is a member of the Thorn Creek Cattlemen's Association, and is active in the State and National organizations with which it is affiliated. He has served 19 years on the Gooding school board, and he is a Rotarian. He is a native of Nebraska.

Formerly, Pearl was Miss Woody, a registered nurse, before she became Mrs. Fredericksen. She was one of the founders of the auxiliary to the Gooding SCD, and in 1949 helped establish the State auxiliary. Two years later she became the first president of the National auxiliary. She is frequently called to do emergency nursing services in the Gooding community. Homemaking duties and public service teamwork with Don keep her schedule overflowing.

The Fredericksens have two sons. In 1957, Bob interrupted his freshman year at the University of Idaho to start Army service. Gene is a student at Gooding High School. One or both will take over responsibilities in the ranch operations when Don and Pearl are ready to ease off and devote more time to rural and State improvement projects.

Don is a cattle and sheep rancher with about 250 Hereford cattle and about 200 sheep. He has nearly 550 acres of irrigated cropland in addition to range; he raises hay, mixed grains, pinto beans, and grass seed.

Don is a firm believer in the use of grass as a soil builder and seeds smooth bromegrass and orchardgrass in all of his hay. He's one of the country's greatest boosters for Idaho "bakers", but does not raise potatoes commercially.

When Don is away from home, maybe for a week or more during the annual and divisional soil conservation district meetings in Idaho, or when the State legislature is in session, Pearl usually remains at the ranch and keeps it going. She takes care of the correspondence and other communications in her husband's extracurricular activities. But she frequently travels with Don as his aide in problems immediately at hand.

Because of their teamwork in common causes,

Pearl's over-all role is as important as that of any private or confidential secretary or executive assistant. Her portable typewriter is as much a part of their traveling gear as a suitcase. By the time Don comes into the house in the evening, after a day's work on the range or in the fields or woods, the day's routine mail is answered and ready for his signature, the schedule for phone calls awaits him, or the copy has been roughed out for the next issue of the State SCD Newsletter. She is an excellent typist, as well as homemaker, nurse, and all-around helpmate.

"Loading up the chuck wagon" and heading for the woods to hunt deer and elk or fish for salmon or trout is an important event for all of the Fredericksens, as well as for the hired man and his family who frequently are asked to "come along."

Seasonally, when Don and his boys need a few days of off-ranch work, a trip to the woods on a pole-cutting expedition sends the trucks home with loads of unmarketable timber that fits into farm and ranch fencing and other similar needs. Fishing gear and guns are standard equipment on these jaunts.

Don has a lot of pride in the 10-year old Gooding Soil Conservation District. It is a stepchild of neighboring Wood River Conservation District, which extends about a mile into one part of Gooding County. Through Don's leadership and the teamwork between the governing body, SCS technicians, and others, operators of about 500 of the 1,000 farms and ranches in the districts are cooperating in the district's program. These operations cover about 97,000 acres.

From its earliest years, the Gooding District has operated a fleet of heavy and other equipment to assist farmers in applying soil- and water-conservation practices to their land. The district is a good cooperator with the Idaho State Fish and Game Department. Outstanding achievements in the conservation of wildlife have been obtained through dovetailing programs of the two organizations. Annually, the district sponsors a joint banquet of cooperators and Gooding businessmen, with the soil conservation district footing the bill.

Don is a leader in the Idaho State Wildlife Federation, has been a division president, and is a member of the local affiliate. Naturally, the

The Fredericksens.

950 acre-foot stockwater pond is stocked with rainbow trout. The project was built with cost-sharing assistance from the Agricultural Conservation Program. Don has worked closely with the Idaho State Fish and Game Department in getting more and better roads into camping and recreational areas.

With Fredericksen's guidance, the State Association of Soil Conservation Districts has developed added strength and leadership at the district governing body level. Within the association and its affiliates, this has been accomplished during the past 3 years, largely during a series of annual training, educational, and administrative conferences.

The work with the State legislature in 1957, with leadership and teamwork on a statewide basis, was especially potent when it obtained total rewriting and replacement of the State soil conservation district's law, enactment of legislation to permit Idaho participation in the Federal small watershed program, and made the first appropriation ($2,000) that the State had ever made in support of its State soil conservation district commission.

Pearl has exerted strong local, State, and national leadership in advancing inclusion of soil and water conservation teachings and study material in public school courses. In Idaho, this

is a direct responsibility that the auxiliaries have accepted at the invitation of the Idaho State SCD Association. The national speaking contest and local poster and essay contests are annual programs for the auxiliary group. Likewise, these auxiliaries have sponsored the annual Soil Stewardship Week observances throughout the State. Through contacts with ministers and other leaders in the churches, the auxiliaries have developed cooperation and have distributed materials provided by SCDs and cooperators.

—HUGH F. EAMES

CONSERVATION CAMP.—The State University of New York College for Teachers at Buffalo provides experiences in conservation to its biology students at a 435 acre camp in Cattaraugus County. Students spend a day or a day and the night at the camp during the spring term. Their experiences include tree planting, maintenance of farm ponds, shrub planting, and other habitat improvements for wildlife. Field trips to acquaint students with plants and animals in their natural habitats and to interpret conservation problems and practices on the land are part of the program of instruction. Located in an area with much abandoned farm land, the camp is a cooperator with the local soil conservation district, the New York State Forest Practice Act, and the Soil Bank Program; furthermore, it is a wildlife refuge.

MINIMUM TILLAGE.—Farmers, througout the Nation, are becoming more and more interested in minimum tillage because of soil compaction problems. Minimum tillage saves labor, tractor fuel, and depreciation of machinery while helping improve soil structure. Cultivating the soil is profitable only when a specific problem, such as seedbed preparation or weed control, requires it. The oftener a tractor and heavy implements are run over a field, the greater the danger of soil compaction that may result in traffic pans that prevent moisture penetration and normal root growth of crops.

RANGE IMPROVEMENT

(Continued from page 212)

our knowledge of the plant's physiological response to its environment, we think we will be in a position to project this knowledge to areas not experimented upon, with a high degree of confidence.

A study currently in progress on depleted rangeland at high elevations is designed to yield such information. Another aspect of this study is the exchange of a pickup truckload of soil between the depleted site and the valley below. We expect to learn from this "displaced" soil, in comparison with that representative of each area, the relative limitations of the soil at high elevations, about which something might be done, and the climate which we cannot yet alter.

Only a few of the many problems connected with range improvement by seeding have been mentioned. Likewise, only a few of the available methods of attacking these problems are discussed. The sample, however, should indicate the magnitude and complexity of the problem.

Of one point the writer feels certain. The Western Range with its beautiful mountains and forests, its endless miles of sometimes drab and rather barren aspect, its low per-acre productivity and great diversity, adds up to a tremendous National resource which is, and will likely continue to be, a challenge to research.

THE RESOURCE CONSERVATION JOB is too big for any one agency or group, governmental or private, to do alone. It is essential that everybody work together at the job of proper use of the land and the water that enables the soil to produce the food, fiber, grass, timber, and wildlife we need.

D. A. WILLIAMS, *Administrator, Soil Conservation Service*